**Commentary**

**Title:** Improving Adolescent Immunization Coverage: The Time to Act is Now

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**Abbreviations:**
Centers for Disease Control and Prevention (CDC)
National Immunization Survey-Teen (NIS-Teen)
Advisory Committee on Immunization Practices (ACIP)
Human Papillomavirus (HPV)
Tetanus, Diphtheria and Pertussis (Tdap)
Influenza (Flu)
Meningococcal Meningitis Vaccine (MenACWY)
Meningococcal B (MenB)
Electronic Health Records (EHR)
Immunization Information Systems (IIS)

**Keywords:** vaccines; adolescent health; meningococcal vaccine; diphtheria-tetanus-pertussis vaccine; papillomavirus vaccines, influenza vaccines

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Improving Adolescent Immunization Coverage: The Time to Act is Now

**Abstract**

Adolescent immunization rates continue to lag far behind infant immunization rates and millions of adolescents remain unprotected from serious and potentially deadly diseases. *Adolescent Immunization: Understanding Challenges and Framing Solutions for Healthcare Providers,* a whitepaper issued by the UNITY Consortium identifies best practices and common elements among successful adolescent immunization initiatives. The whitepaper, a collaboration of the group's members, liaisons and invited experts, outlines the INSPECT(Immunization Neighborhood, Sharing, Platform, Educate, Champions and Talk) Imperatives, a call to action urging healthcare providers to increase adolescent immunization coverage rates by improving in one or more of the following areas: (1) Access -maximize opportunities for vaccination and avoid missed opportunities; (2) Education - educate parents and teens to further understanding of vaccines and to elevate prioritization; (3) Advocacy – guide healthcare providers to make confident, concise recommendations for all CDC-recommended adolescent vaccines, along with developing immunization champions who advocate for adolescent immunization within their practice or network; (4) Systems - advance technology, including the use of electronic immunization information systems (IIS), implement standing orders and other tools that improve efficiencies; and (5) Measurement - improve knowledge (and dissemination) of provider and practice progress on meeting adolescent immunization goals (e.g. benchmarking, performance reports).

Data from the Centers for Disease Control and Prevention's (CDC) 2016 National Immunization Survey-Teen (NIS-Teen) was recently released and, once again, adolescent immunization rates for some vaccines recommended by the Advisory Committee on Immunization Practices (ACIP) are disappointingly low [1]. The CDC recommends adolescents receive four immunizations – two of which are administered as multi-dose series – to help protect against meningococcal meningitis; human papillomavirus (HPV); tetanus, diphtheria and pertussis (whooping cough) (Tdap); and influenza (flu). Despite these recommendations, in 2016 only 39 percent of 13 through 17 year olds who received the first dose of meningococcal meningitis vaccine (MenACWY) received the recommended second dose, and only 43 percent of girls and 32 percent of boys completed the HPV vaccine series [1]. While the majority (88 percent) of teens received the Tdap booster, there is still room for improvement. Furthermore, less than half of teens 13 through 17 years of age were vaccinated against the flu during the 2015-2016 influenza season [2].

The recent addition of a 16-year old column on the CDC's Child and Adolescent Immunization Schedule [3], is an important step in the right direction with respect to the MenACWY booster and consideration for administration of meningococcal B (MenB) vaccine, but we need to promote a more action-oriented approach among healthcare providers. Invasive meningococcal disease caused by bacterial meningitis has significant financial, medical, and psychosocial consequences [4]. The two available vaccines in the U.S., MenACWY and MenB, have been shown to be effective for prevention of the A, B, C, W, and Y serogroups [5]. However, confusion about the Category B ACIP MenB recommendation, in particular, may have resulted in underutilization, though the American Academy of Pediatrics clearly encourages pediatricians to discuss this vaccine with parents and families [6,7].

The Unity Consortium recently issued a whitepaper titled *Adolescent Immunization: Understanding Challenges and Framing Solutions for Healthcare Providers* [8]. It summarizes the current immunization landscape, including barriers to successful implementation, and highlights potential solutions to help reach important immunization targets for this population. The whitepaper was developed following a November 2016 roundtable (see Table 1) where the group's members, liaisons and invited experts shared their knowledge and experience and looked for common elements among successful adolescent immunization initiatives. It concludes that best practices in adolescent immunization include improvements in one or more of the following areas: access, education, advocacy, systems and measurement.

The whitepaper also puts forth a call to action called the INSPECT (Immunization Neighborhood, Sharing, Platform, Educate, Champions and Talk) Imperatives, which take into account both the obstacles to adolescent immunization and the solution-based elements identified by the Unity Roundtable. The INSPECT Imperatives provide overarching guidance for healthcare providers and urge providers, provider organizations, and healthcare systems, to take a look at their current adolescent immunization practices, and consider how they could improve vaccination coverage among their patients. For those ready to take action, it provides a solid blueprint.

First and foremost, we must increase access for adolescents by expanding and integrating the immunization neighborhood. If teenagers are not showing up for routine well visits, we need to meet them where they are, including at schools, public health venues, acute and urgent care settings, flu clinics and pharmacies [9]. Integrated care between physicians and other complementary healthcare providers is necessary to ensure that these opportunities for vaccination are not missed [10]. Vaccination assessments should also become routine in school

physicals, sick visits and ongoing care for chronic conditions and injuries [11]. Expanded evening and weekend hours should also be considered to help increase access for time-strapped teens who juggle school, sports, jobs and extra-curricular activities.

We also need to do a better of job of leveraging technology and improving information sharing. Technology offers new and emerging tools to improve vaccination tracking and screening. It can also improve efficiencies and help integrate information within the immunization neighborhood. Utilization of tools such as Electronic Health Records (EHRs), standing orders, and reminder/recall notifications should become standards of practice at both the individual provider level as well as throughout integrated health systems and networks of care. Use of immunization information systems (IIS, formerly known as registries) should be universal and utilized for both accessing records prior to vaccination and reporting after vaccination to improve tracking and integrated care. Well populated IISs and EHRs will increase the efficiency for assessing vaccination needs of patients [12-16].

The INSPECT Imperatives also call for the establishment of an immunization platform for older adolescents at age 16. As outlined in the Society for Adolescent Health and Medicine's (SAHM) recent position statement, *Establishing an Immunization Platform for 16 Year-Olds in the United States* [17], and the Adolescent Immunization Initiative whitepaper, *Rationale for an Immunization Platform at 16 years of Age,* [18] providers should establish a routine 16 year old preventive visit, creating an opportunity for immunization and discussion of health care topics uniquely relevant to older teens and young adults.

There is also a need for continued education of parents and teens to increase understanding of vaccines and to raise the priority for immunization [19, 20]. A recent Unity-sponsored Harris poll conducted from September-October, 2016, found that nearly 1 in 4 parents

and teens do not know how being vaccinated helps teens [21]. We cannot expect parents and teens to make immunization a priority if we are not effectively communicating to them the reasons why they should do so. Careful examination and/or research on what approaches, channels and messages are most effective in reaching older adolescents are necessary. Pilot communication programs using new media and technology should be implemented. Healthcare providers must also give confident, concise and consistent recommendations to parents and adolescents for all recommended vaccines, as provider recommendation is a strong determinant in parent and adolescent agreement to vaccinate [9].

Finally, we must develop and empower immunization champions and emphasize the need to talk about quality improvement. Immunization champions or advocates have the potential to significantly improve adolescent immunization coverage [22]. Within a practice, immunization champions often become passionate drivers for setting action plans, establishing and ensuring processes and accountability, providing ongoing communications and feedback, and training and motivating staff. Advocates can also help establish greater transparency and dissemination of practice- and provider-level immunization performance measurement to staff.

Lagging adolescent immunization rates should not be ignored or minimized. It is time to take action to solve the problem and offer greater protection to our adolescent and young adult population. The INSPECT Imperatives can help healthcare providers improve immunization coverage and preventive care for our youth. There is no one-size-fits-all solution, and not all healthcare providers can realistically take action on each imperative, but if individual providers, provider organizations, and healthcare systems take action, the results would follow.

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**E. Table**

**Table 1**. Unity Roundtable Participants

| **Name** | **Affiliation** |
|---|---|
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| Claire Hannan* | Association of Immunization Managers |
| David Kaplan | University of Colorado, Children's Hospital |
| Judy Klein* | UNITY Consortium |
| Amy Middleman | University of Oklahoma Health Sciences Center |
| Mark Ritter | Texas Department of State Health Services, Immunization Branch |
| Mitchel Rothholz* | American Pharmacists Association |
| Jason Rubin | Walgreens |
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